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ABSTRACT

Before vocational instructional products are adopted for statewide dissemination in South Carolina, they must undergo a field test. An effective field test design incorporates collection of data about the instructional products, the students, and the teachers who use the products. The design of a control group and an experimental group compares learners who have used the new materials with those who have not. Five basic field test data collection methods are tests and performance measurement instruments, classroom observation scales, interview schedules, student and teacher questionnaires, and existing records. An evaluative report is prepared after data are analyzed through an item analysis, group descriptive statistics, comparison of pre- and post-scores, comparison of performance of control and experimental groups, and determination of teacher effects. (A chart is provided that lists the components and responsible party.) (YLB)

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A Propcsed Design

for a

Vocational Instructional Materials Evaluation

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Introduction

Field testing of instructional materials is an evaluation procedure designed to provide valuable information about newly developed instructional materials. Before curriculum products can justifiably be placed in the schools, it is desirable to obtain evidence that the products are usable and effective with the target population. Materials which, while still in the hands of the developer, seem sound as to content, usability, and attractiveness, are sometimes shown to have major flaws when placed in the actual instructional setting. Examples of such flaws include content sections which are unclear and not easily understood, confusing or incomplete instructions, and an inappropriate reading level. Furthermore, materials which are developed following the best guidelines of instructional theory sometimes fail to achieve the intended instructional objectives. The time and expense involved in producing new curriculum materials which are ineffective and/or editorially flawed can be saved by using field test procedures to identify potential sources of the ineffectiveness before the materials are mass produced. Field testing, therefore, serves an essential function and is instrumental to dissemination of new curriculum materials.

Basically, such testing takes place in order to improve curriculum products and to establish evidence "that the product is effective in achieving expressed objectives" (Hammond, 1969). The information obtained can be used for decision making by several groups. Sponsors of the products can make more rational decisions about continued funding and/or dissemination. Developers gain information which may be used to "identify aspects of the product where revision is desirable" (Cronbach, 1963). Administrators can use the information to make adoption and utilization decisions (Gordon, 1979).

In view of the type and usefullness of the information gained, the time and cost of conducting a carefully designed field test of new curricular materials is well justified.

In order to insure that materials used in Vocational Education Programs in South Carolina are of high quality and are effective with the target population, the OVE proposes that all new instructional products undergo a field test before they are adopted for statewide dissemination. This paper describes a general evaluation plan which will serve as a framework for all future field tests. It is recognized that the unique features of each product must be taken into consideration and the possibility exists that elements of the evaluation plan will have to be added, deleted, or revised on occasion. However, the proposed plan attempts to concentrate on features which are common to most evaluations and will, therefore, serve as a basis for each future test design.

The Field Test Design

An effective field test design will incorporate collection of data from and/or about the instructional product, the students and the teachers who use the product.

The Instructional Product

In a field test, the instructional product is the treatment. Thus it is critical that the product be identified as precisely as possible. Many products allow for much flexibility as to teacher-elaboration or selection of suggested activities. Because of this, mere examination of the new material under investigation is not sufficient for definition of the treatment. Therefore, it is essential that the developer furnish the OVE with

a complete description of the instructional product prior to the initiation of the evaluation procedure. This description will be used by the OVE to aid in the construction of data-gathering instruments and should include:

1) a complete list of measurable instructional objectives with outcomes clearly identified;
2) a copy of the materials (including curriculum guides, teacher's manuals, etc.);
3) a statement of all required resources or practices considered central to appropriate use of the materials (e.g., student versus teacher-centered; individualized modules versus whole group instruction; etc.);
4) the degree to which the curriculum plan must be adhered to in the classroom (i.e., the degree to which teachers may make changes in the plan during the course of instruction).

Student Information

The second element of the proposed field test design concerns the collection of data from and about the students themselves. This information will be used to answer such questions as:

1) Is the instructional product practical for classroom use?
2) Do students find the material interesting? Appealing? Relevant?
3) Is the material more effective for some students than others (e.g., disadvantaged versus non-disadvantaged; males versus females; etc.)?

The types of information gathered to address these questions may include any combination of the following:

1) student reactions

2) student demographic and education information

3) student performance on appropriate pre- and post-tests.

The Teacher

Information of the following types from and about the teachers involved in the field test will be collected:

1) attitudes and opinions about the instructional materials.

2) demographic data

3) characteristics such as degree of training, years of teaching experience, etc.

4) extent to which teachers deviated from the planned use of the product (i.e., sequence, emphasis, omissions).

Such information is very important since the developer will depend heavily upon teachers' reactions in making decisions concerning product revisions. Furthermore, in assessing the meaning of test results, knowledge about the teachers' use of the materials can be helpful in accounting for differences in student performance.

Evaluation Design

Unless circumstances peculiar to a specific field test prevents it, the evaluation design will compare learners who have used the new materials with those who have not. The proposed format is:

Experimental Group - Pretest - Instruction Using New Materials - Post Test

Control Group - Pretest - Instruction - Post Test

Without such a control group design, it can easily be argued that student learning gains are attributable to factors other than the materials under

investigation (e.g., maturation; other student experiences, etc). Furthermore, it is only by use of such a design that conclusions may be drawn about the relative merits of the new materials versus the materials currently in use - an important consideration in making decisions about adoption and dissemination.

The most desirable control group design is one which includes random assignment of students to experimental and control groups. In such a design, chance determines which students are assigned to the class(es) with the new curriculum materials (experimental group) and which to the class(es) with the currently used materials (control group). In a design of this type, all student differences (e.g., ability, motivation) will tend to be equally distributed and the two groups can be assumed to be equal in all respects at the initiation of the field test. Because of this initial equality, outcomes demonstrated at the end of the evaluation are assumed to be a function of the instruction and not of other factors or events (Tuckman, 1979, pages 55 - 56).

Unfortunately, in most field tests it is infeasible to use randomization because of practical consideration. Requiring randomization would often work greater hardships on local administrators than can reasonably be asked. Therefore, the proposed design does not require randomization but will use other means (i.e., student/teacher information, pre-test results, and school characteristics) to determine the degree to which experimental and control groups are similar at the beginning of the test.

Data Collection

As suggested by Gordon (1975), the methods of data collection in field test evaluations are implied by the types of data specified in the evaluation questions. Five basic field test data collection methods are:

1) tests and measurement instruments

2) classroom observation

3) questionnaires

4) interviews

5) existing records.

In most instances, field tests conducted by the OVE will utilize all five methods. There will, however, be variation in the importance assigned to each method depending on the type of material being tested. There may also be instances in which one or more methods can be dropped. This decision will be made by the evaluator prior to each specific field test.

Performance Measurement Instruments

Two types of performance measurement will be used in most OVE field tests: criterion referenced test information and norm referenced test information. Two criterion referenced tests will be used for each field test to be conducted by the OVE. These will take the form of a pre-test to be administered to all experimental and control groups prior to the beginning of instruction for the course in question and a post-test to be administered at the end of instruction. Development of the tests will follow accepted test construction practices, will be based on a list of instructional objectives identified as common to all classes involved in the field test, and will require two to four months for construction and item analysis. Administration of the tests will be the responsibility of school personnel using OVE guidelines.

Available information such as aptitude and achievement test scores will also be used whenever possible. This test information will be gathered from existing records and will serve two purposes. First, such

information will be necessary to assess the degree to which the experimental and control groups are similar prior to instruction. In the absence of randomization, assessing this similarity will be an important issue in comparison of the experimental and control groups. A second use of this test information will be to identify factors which may relate to student performance. For example, examination of the relationship between prior reading achievement test scores and performance on the criterion-referenced achievement test may indicate that only students with unusually high reading ability are likely to use the materials successfully. This sort of information may be used by the developer for revision purposes (e.g., rewriting with a lower reading level) or by the user to make placement decisions (e.g., only assigning good readers to sections using the materials).

Classroom Observation Scales and Interview Schedules

Classroom observation checklists and student/teacher interview schedules will be used in most OVE field tests in order to collect information pertaining to questions concerning product manageability and the degree to which materials were used as intended. Development of these instruments will be based on the materials description submitted to the OVE by the developer. They will be developed prior to initiation of the field test and will require one to two months construction time.

Observation scales and interview schedules will be used during periodic site visits to the experimental classes (two visits per class, minimum). The school personnel will be informed that such visits will occur, but will not be aware of specific times of the visits.

Questionnaires

Questionnaires will be administered to students and teachers at the end of the field test and will be used to assess attitudes about the product in question. These questionnaires will be administered by school personnel following OVE guidelines. Construction of the questionnaires will require one to two months. However, because they will not be administered until the end of the field test, it will not be necessary that they be completed prior to the beginning of the evaluation process.

Existing Records

In addition to the test information mentioned previously, data regarding teacher training, background, and experience and student/teacher demographic data will be required. This information will be requested of the schools involved when appropriate.

Data Analysis and Interpretation

Data analysis will be conducted and a report of the evaluation results will be prepared and submitted to appropriate parties. The data analysis will consist of the following:

1) an item analysis will be performed for the pre-test, the post-test and the attitude measure(s);
2) appropriate group descriptive statistics will be calculated for all cognitive tests and attitude measures;
3) if the experimental and control groups are not initially similar, a gain score will be calculated for all groups (post-test scores minus pre-test scores);

4) pre - post test scores will be compared for each group using appropriate analysis techniques (the test for correlated samples or equivalent);

5) performance of the experimental versus the control group will be compared using appropriate statistical techniques:

6) differences between classrooms within the experimental group will be examined in an attempt to determine "teacher-effects" (i.e., the degree to which performance is affected by teaching style, deviation from the curriculum plan, etc.).

Component	Responsible Party
1. Plan designed for specific materials.	
A. Description of material.	CDS
B. Plan designed.	VRCU
C. Information provided to RCU as required.	PP&D and CDS
2. Identification of Experimental/Control groups	
A. List of possible sites.	PP&D
B. Contact possible sites to determine willingness to participate.	PP&D
C. Choose most representative sites.	RCU
D. Notify chosen sites.	PP&D
3. Orientation for school personnel.	
A. Development of inservice materials.	
1. Use of materials and record keeping.	PP&D/CDS
2. Administration of data collection instruments.	RCU
B. Conduct inservice [illegible].	PP&D
4. Construction and field-testing of data collection instruments.	
A. List of instructional objectives for new materials.	CDS
B. Identification of instructional objectives from A which are common to control group instruction	PP&D
C. Construction of data collection instruments	RCU
D. Field-testing of instruments	
1. Review for face validity.	PP&D, CDS, Selected school personnel
2. Secure field-test site.	PP&D
3. Administer test.	Field-test site school personnel
4. Analyze results and revise instruments	RCU
5. Site visits/classroom observations	Personnel among PP&D, CDS, RCU and/or outside personnel hired and trained by OVE. Decision to be made jointly by the three sections for each specific field test.
6. Data collection from student/teacher records.	VRCU, School personnel
7. Administration of tests/attitude measures	School personnel following VRCU guidelines

8.	Data Analysis	VRCU
9.	Writing evaluation report.	VRCU

CDS	Curriculum Development Section
PP&D	Program Planning and Development
VRCU	Vocational Research Coordinating Unit

Reference List

Cronbach, Lee J. Course Improvement Through Evaluation. Teachers College Record, 1963.

Gordon, A. K. Guidelines on Plot and Field Testing of Curriculum Products. Bureau of Occupational and Adult Education, USOE, 1975.

Hammond, R. Context Evaluation of Instruction in Local School Districts. Educational Technology, 1969, 9 (1), 13 - 18.

Tuckman, B. W. Evaluating Instructional Programs. Allyn and Bacon, Inc., 1979.